

FIG. 1 is a block diagram of a computer system 10. The system 10 includes an instruction processor (IP) 11, an operating system (OS) 12, and a task control unit (TCU) 13. The IP 11 is connected to the OS 12, which is connected to the TCU 13. The TCU 13 is connected to a hardware support for function calls 14. The IP 11 includes a features list 23, a supported features 24, and a report 22. The OS 12 includes a features list 40, a supported features 41, and an exchange control 21. The TCU 13 includes a features list 50, a supported features 51, and a TCU\_exchange\_features function 16. The hardware support for function calls 14 is connected to the TCU\_exchange\_features function 16.

FIG. 1

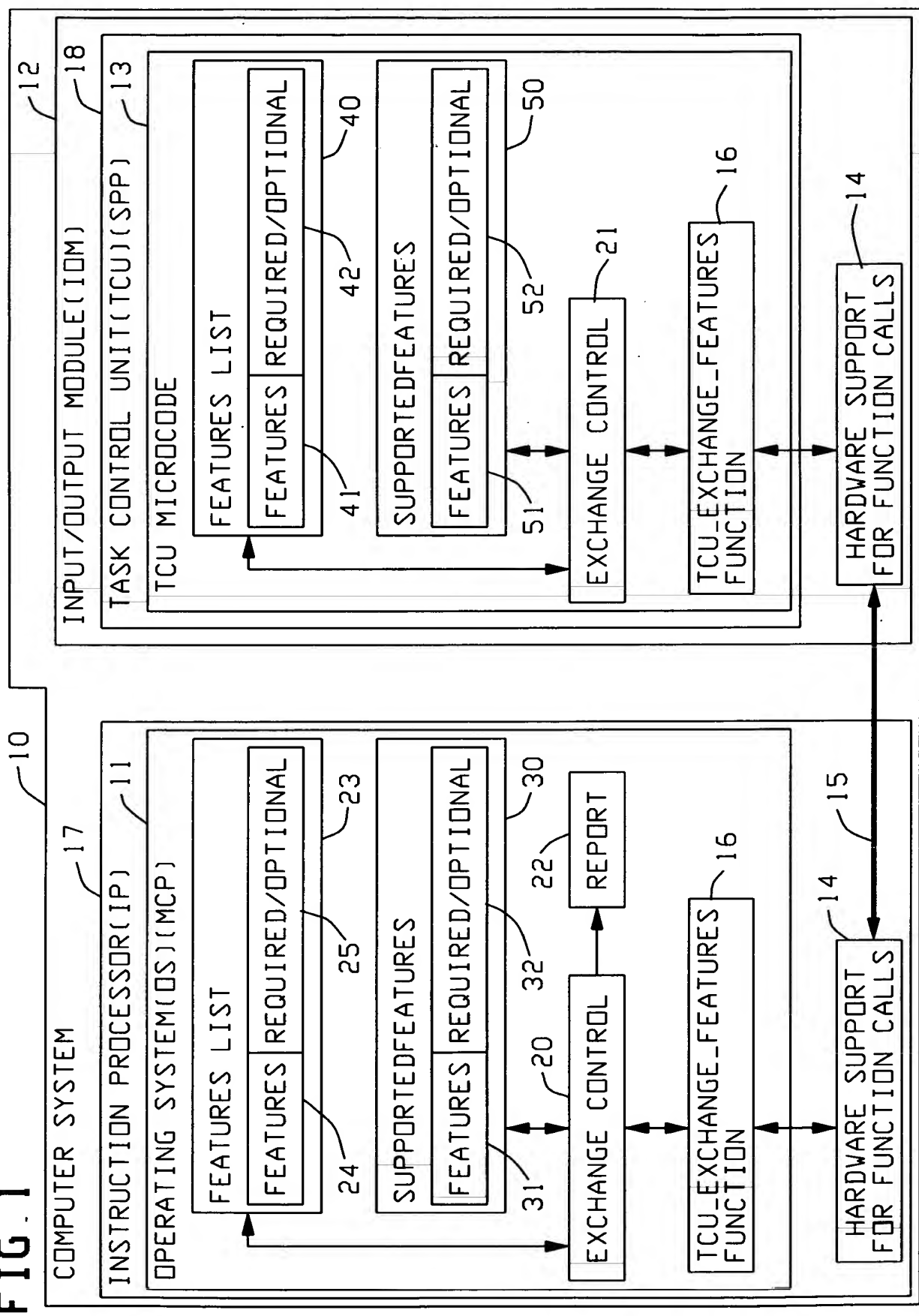


FIG. 2(a)

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BOOLEAN PROCEDURE
TCU_EXCHANGE_FEATURES
(WORDNUM, MCPTCUFEATURES,
LASTCALL);
NAME      WORDNUM, MCPTCUFEATURES,
          LASTCALL;
INTEGER WORDNUM;
BOOLEAN MCPTCUFEATURES, LASTCALL;

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FIG. 2(b)

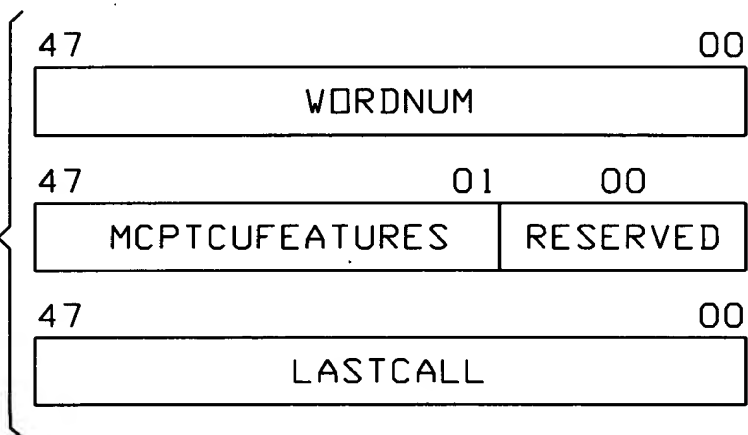


FIG. 2(c)

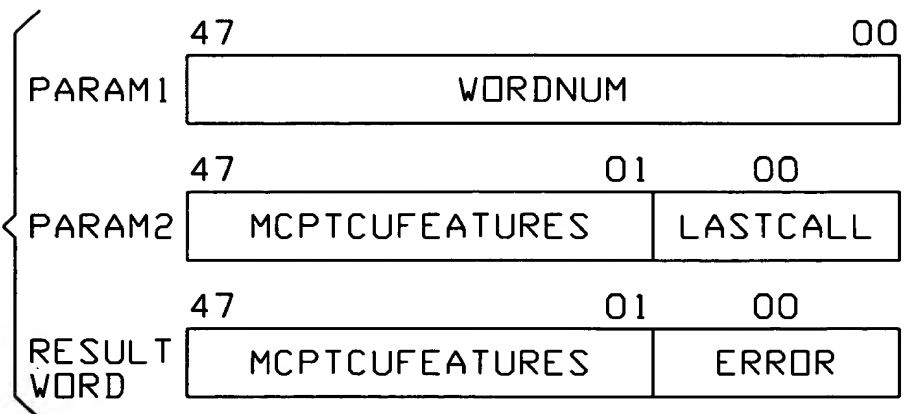
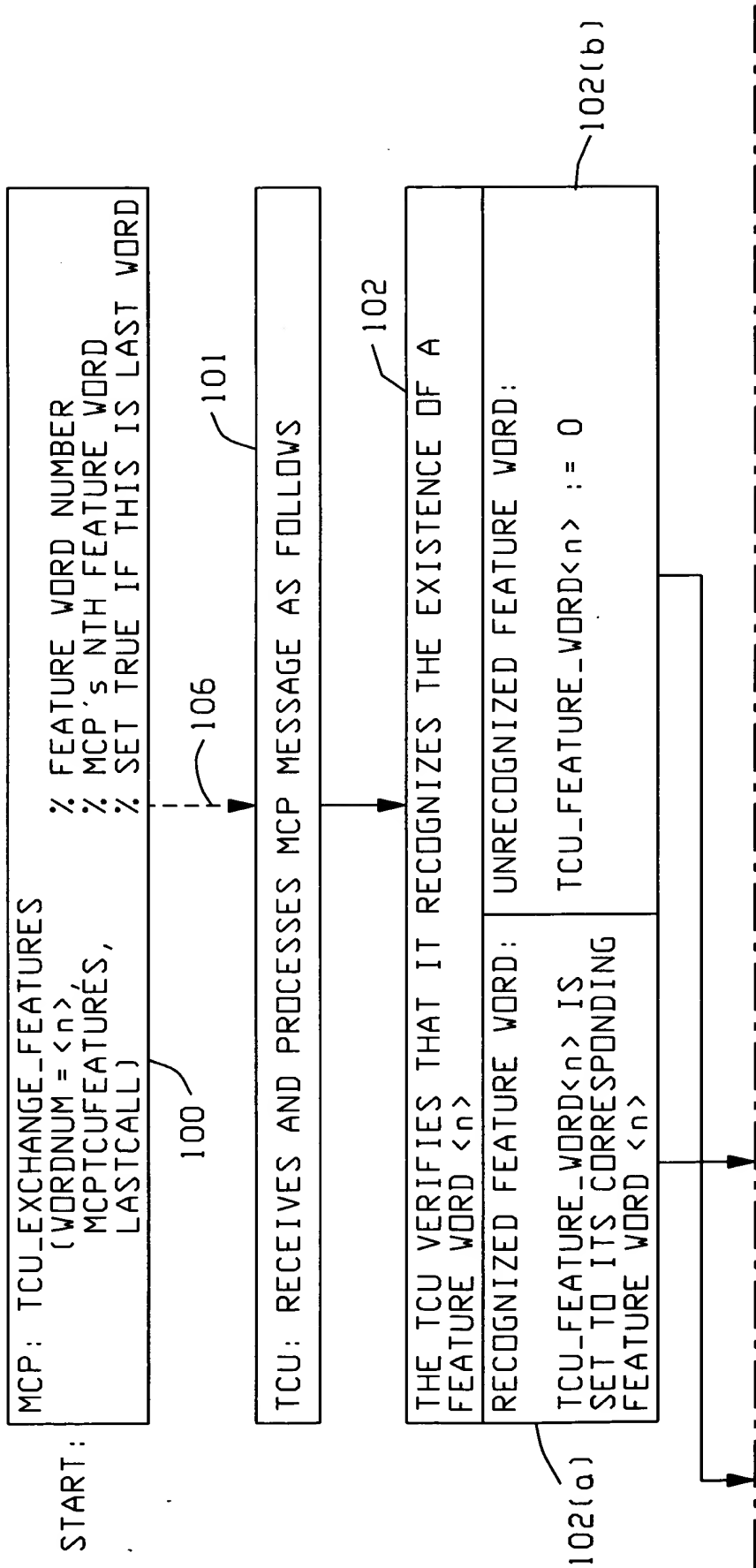
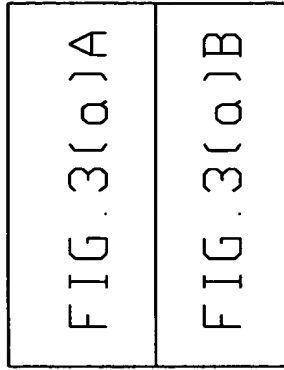
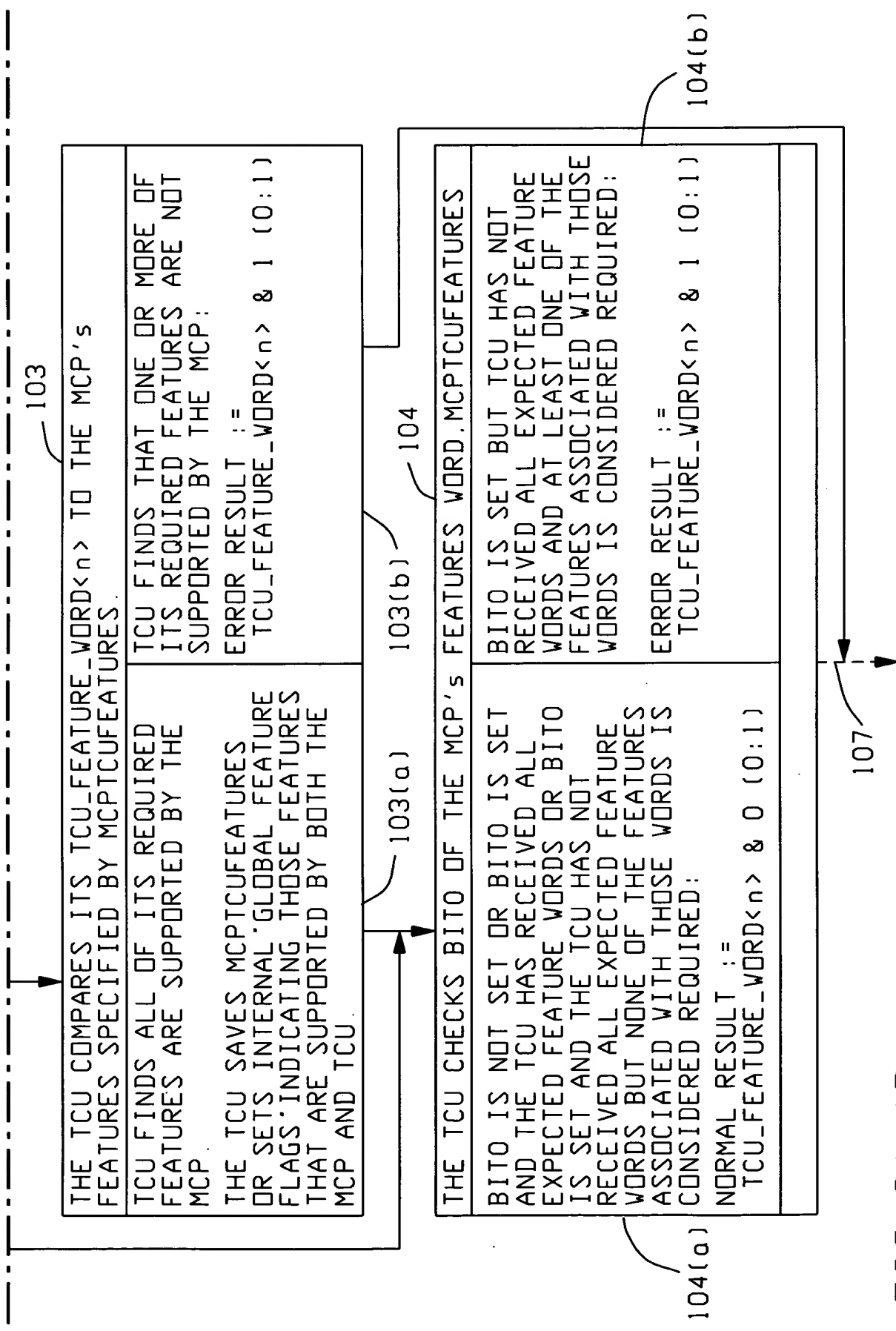


FIG. 3(a)A

FIG. 3(a)





**FIG. 3(a)B**

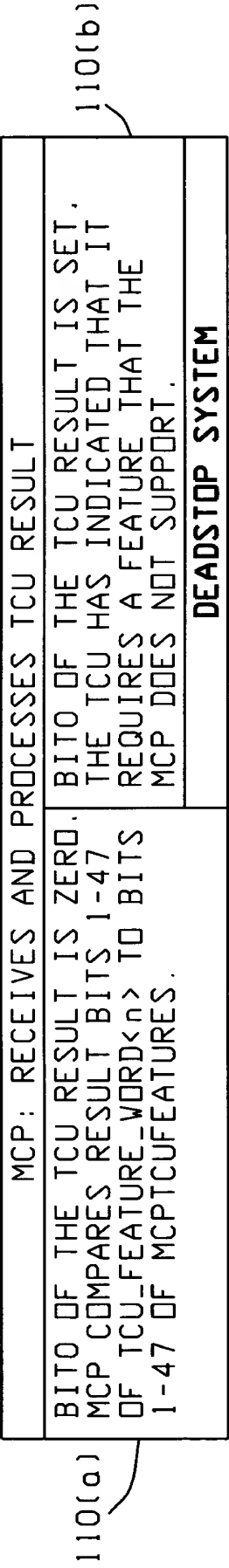
RETURN TCU\_FEATURE\_WORD<N> RESULT TO MCP

# FIG. 3(b)A

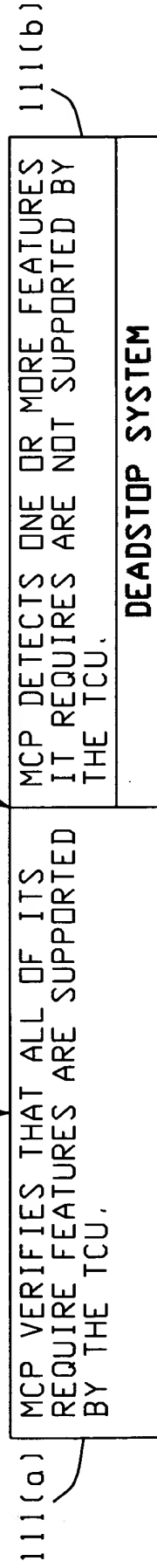
TCU\_FEATURE\_WORD<n> RESULT RETURNED TO MCP

107

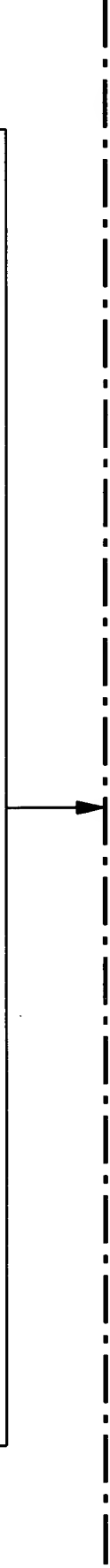
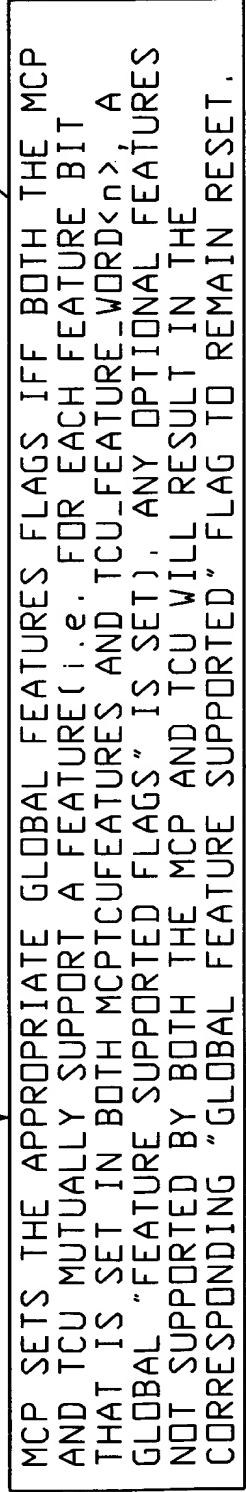
110



111



112



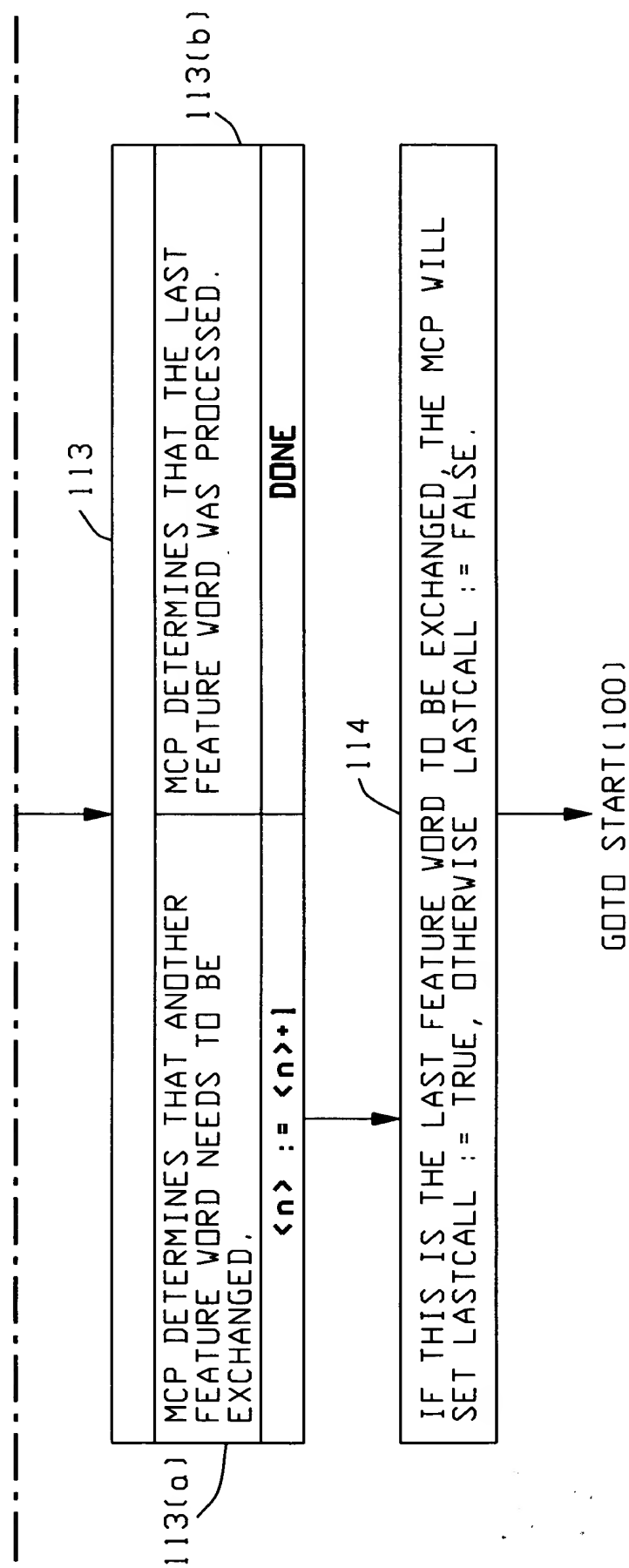


FIG. 3(b)B

FIG. 3(b)A	FIG. 3(b)B
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START:  [OS]  WORDNUM_OS := 1;

LOOP:   FEATUREWORD_OS := FEATURES_OS[WORDNUM_OS];  % FEATURES_OS: Array of feature word
                                                    % bit masks supported by OS. This
                                                    % is hardcoded data.

        IF this is the last feature word THEN
            FEATUREWORD_OS := FEATUREWORD_OS & 1 [0:1];

        [OS]  SPPFEATURES_OS := EXCHANGE_FEATURES (WORDNUM_OS, FEATUREWORD_OS);

        [SPP] %Receives WORDNUM_OS and FEATUREWORD_OS from function call. Note that references
              % to these parameters use "<>"
        IF <WORDNUM_OS> is not a recognized feature word THEN
            FEATUREWORD_SPP := 0;
            GOTO CHECK_LAST;

        FEATUREWORD_SPP := FEATURES_SPP[<WORDNUM_OS>];  %FEATURES_SPP: Array of feature word
                                                         %bit masks supported by SPP. This
                                                         % is hardcoded data.

        IF (FEATUREWORD_SPP NEQ <FEATUREWORD_OS>) THEN % Compare bits [47:46]
            IF a feature required by SPP is not supported by OS THEN
                RESULT_SPP := FEATUREWORD_SPP & 1 [0:1]; % Set error bit in result
                GOTO RETURN;
            % SUPPORTEDFEATURES_SPP: Array of supported features bit masks.
            SUPPORTEDFEATURES_SPP[<WORDNUM_OS>] := FEATUREWORD_SPP AND <FEATUREWORD_OS>;
        ELSE
            SUPPORTEDFEATURES_SPP[<WORDNUM_OS>] := FEATUREWORD_SPP;

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Fig. 4A

Fig. 4B

Figure 4

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CHECK_LAST:      IF Bit0 of <FEATUREWORD_OS> set AND did not receive all expected feature words THEN
                  IF any of the remaining features are required by the SPP THEN
                    RESULT_SPP := FEATUREWORD_SPP & 1 [0:1]; % Set error bit in result
                    GOTO RETURN;
                  ELSE
                    % Set remaining words in SUPPORTEDFEATURES_SPP array to zero;
                  ELSE
                    RESULT_SPP := FEATUREWORD_SPP & 0 [0:1]; % Non-error Result (reset error bit)

RETURN:          RETURN (RESULT_SPP);

[OS]             IF bit0 of SPPFEATURES_OS is set THEN
                  %Fatal error. Abort system initialization. Report feature mismatch to
                  %operations, etc. System Stopped.

                  IF (FEATUREWORD_OS NEQ SPPFEATURES_OS) THEN
                    IF a feature required by OS is not supported by SPP THEN
                      % Fatal error. Abort system initialization. Report feature mismatch to
                      % operations, etc. System Stopped.
                    ELSE
                      % SUPPORTEDFEATURES_OS: Array of supported features bit masks.
                      SUPPORTEDFEATURES_OS[WORDNUM_OS] := FEATUREWORD_OS AND SPPFEATURES_OS;
                    ELSE
                      SUPPORTEDFEATURES_OS[WORDNUM_OS] := FEATUREWORD_OS;

                  IF more feature words to exchange THEN
                    BEGIN
                      WORDNUM_OS := WORDNUM_OS + 1;
                      GOTO LOOP;
                    END;

```

Fig. 4A

Fig. 4B

Figure 4